

A.D. 1873, 16th JULY. N° 2454.

SPECIFICATION

OF

FREDERICK JACOBSEN.

PURIFICATION OF SEWAGE, &c.

LONDON:
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1874

A.D. 1873, 16*th* JULY. N° 2454.

Purification of Sewage, &c.

LETTERS PATENT to Frederick Jacobsen, of No. 1, India Buildings, Victoria Street, Edinburgh (Merchant), for the Invention of "THE CLARIFICATION AND PURIFICATION OF SEWAGE, AND THE DISCHARGES OF POLLUTED WATERS FROM PAPER MILLS, PRINTING WORKS, DYE WORKS, AND FACTORIES BY MEANS OF PRECIPITATION."

Sealed the 13th January 1874, and dated the 16th July 1873.

PROVISIONAL SPECIFICATION left by the said Frederick Jacobsen at the Office of the Commissioners of Patents, with his Petition, on the 16th July 1873.

I, FREDERICK JACOBSEN, of No. 1, India Buildings, Victoria Street, Edinburgh (Merchant), do hereby declare the nature of the said Invention for "THE CLARIFICATION AND PURIFICATION OF SEWAGE, AND THE DISCHARGES OF POLLUTED WATERS FROM PAPER MILLS, PRINTING WORKS, DYE WORKS, AND FACTORIES BY MEANS OF PRECIPITATION," to be as follows :—

I use as precipitant the sludge, mud, or refuse obtained after the ley water of paper mills has undergone the soda recovering process. This

product which at present is a waste and encumbrance I thoroughly dry, and having reduced it into a fine powder I mix it with water until I obtain a thick creamy liquid (something like a syrup). This liquid I then add in certain proportions of so many grains per gallon to the polluted waters to be operated on, and having been thoroughly mixed therewith by means of revolving stirrers or otherwise the mixture is allowed to settle in properly constructed settling ponds or tanks, and thereafter a thick floculent precipitant will soon commence to form, which gradually subsides to the bottom of the pond or tank, leaving a clear supernatent water divested of all or almost all previous impurities.

Instead of diluting the dried material with water the material may also be added in the form of a powder to the foul waters proposed to be treated.

The supernatent water may in the case where the discharges of factories have to be treated be used over again for rewashing rags, fibre, or other manufacturing purposes, and the sludge may be used for precipitating fresh supplies of polluted discharges. Where sewage has to be treated I dry the sludge and dispose of it for manurial purposes.

In order to accelerate and facilitate on the subsidence, the following ingredients may in certain cases be used, namely, common salt, sulphate of zinc, chloride of iron, perchloride of iron. These may be added either singly or jointly in a solid or soluble state to the precipitant.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Frederick Jacobsen in the Great Seal Patent Office on the 14th January 1874.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, FREDERICK JACOBSEN, of No. 1, India Buildings, Edinburgh, Merchant, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Sixteenth day of July, in the year of our Lord One thousand eight hundred and seventy-three, in the thirty-

seventh year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Frederick Jacobsen, Her special licence that I, the said Frederick Jacobsen, my executors, administrators, and assigns, or such others as I, the said Frederick Jacobsen, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "THE CLARIFICATION AND PURIFICATION OF SEWAGE, AND THE DISCHARGES OF POLLUTED WATERS FROM PAPER MILLS, PRINTING WORKS, DYE WORKS, AND FACTORIES BY MEANS OF PRECIPITATION," upon the condition (amongst others) that I, the said Frederick Jacobsen, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Frederick Jacobsen, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

I use as precipitant the sludge, mud, or refuse obtained after the ley water of paper mills has undergone the soda recovering process. This product which at present is a waste and encumbrance I thoroughly dry, and having reduced it into a fine powder, I mix it with water until I obtain a thick creamy liquid (something like a syrup). This liquid I then add in certain proportions generally from three to ten grains per gallon to the polluted waters to be operated on, and having been thoroughly mixed therewith by means of revolving stirrers or otherwise, the mixture is allowed to settle in properly constructed settling ponds or tanks, and thereafter a thick flocculent precipitant will soon commence to form, which gradually subsides to the bottom of the pond or tank, leaving a clear supernatant water divested of all or almost all previous impurities.

Instead of diluting the dried material with water, the material may also be added in the form of a powder to the foul waters proposed to be treated.

Jacobsen's Improvements in the Purification of Sewage.

The supernatant water may in the case where the discharges of factories have to be treated, be used over again for rewashing rags, fibre, or other manufacturing purposes, and the sludge may be used for precipitating fresh supplies of polluted discharges. Where sewage has to be treated, I dry the sludge and dispose of it for manurial purposes.

In order to facilitate and accelerate the subsidence, the following ingredients may in certain cases be used, namely, common salt, sulphate of zinc, chloride of iron, perchloride of iron. I find in practice also that alum rock, alum schist, or alum sludge, slaked lime, and the water drawn from electric batteries may be used advantageously to facilitate and accelerate such subsidence. The ingredients severally before mentioned may be added either singly or jointly, and either in a solid or soluble state to the precipitant.

Having thus explained the nature of my Invention, and how I carry it into practical effect, I desire to say that I do not claim any apparatus or construction of tanks for effecting the object herein-before set forth, but what I claim as novel and of my Invention is the using as a precipitant of the sludge arising from the ley water of paper mills, as before mentioned, either alone or in combination with all or some one or more of the ingredients herein-before specified for the purification of polluted waters in the manner before described or any mere modification thereof.

In witness whereof, I, the said Frederick Jacobsen, have hereunto set my hand and seal, this Thirteenth day of January, Eighteen hundred and seventy-four.

FRED^K. JACOBSEN. (L.S.)

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
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